SD11
.A7 P921
1961

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

1961 ANNUAL REPORT

PRIEST RIVER EXPERIMENTAL FOREST
PRIEST RIVER, IDAHO

By

Stanley B. Carpenter

Intermountain Forest and Range Experiment Station
U. S. Department of Agriculture, Forest Service

M—5123

U. S. GOVERNMENT PRINTING OFFICE

16—73806-1

1961 ANNUAL REPORT

PRIEST RIVER EXPERIMENTAL FOREST
PRIEST RIVER, IDAHO

By Stanley B. Carpenter
Intermountain Forest and Range Experiment Station
U. S. Department of Agriculture, Forest Service

1961 ANNUAL REPORT

PRIEST RIVER EXPERIMENTAL FOREST
PRIEST RIVER, IDAHO

CONTENTS

	Page
RESEARCH ACTIVITIES	1
FOREST MANAGEMENT RESEARCH	1-2
FOREST DISEASE RESEARCH	3
FOREST FIRE RESEARCH	4
FOREST INFLUENCES	5
WEATHER SUMMARY, 1961 PRIEST RIVER EXPERIMENTAL FOREST (CONTROL STATION)	6
MONTHLY PRECIPITATION, 1961 AT THREE LOCATIONS ON BENTON CREEK	7
SNOW DEPTH AND WATER CONTENT, 1961 PRIEST RIVER EXPERIMENTAL FOREST	8
ADMINISTRATIVE ACTIVITIES	9
MAINTENANCE ACTIVITIES	9-10
PUBLIC RELATIONS	11
INSPECTIONS	11
MEETINGS	11
COOPERATION	11

ANNUAL REPORT, 1961, PRIEST RIVER EXPERIMENTAL FOREST

RESEARCH ACTIVITIES

Forest Management Research

Specific gravity determinations of grand fir samples were completed in early 1961. The electric bill on the forest soared as the drying oven was used to determine the oven-dry weights of the many samples. Volumes were then determined and the specific gravity of each sample calculated. These data were sent to Al Stage. Through this study, Stage hopes to provide foresters with a means of estimating the yield capacity of grand fir sites and predicting the growth and yield of even-aged fir stands in the Intermountain area. Similar specific gravity analyses were performed subsequently for Dave Tackle on lodgepole pine.

The growth of western white pine in the Kempff thinning plot (Plot 111) was measured and compared with that occurring in the surrounding stand. The Kempff thinning study is a selection thinning experiment established in 1925 in a healthy, well-stocked, 62-year-old stand on an excellent site.

Plots 180 and 181 (Center Ridge Thinnings) were remeasured in 1961. These plots, which emphasized the release of western redcedar, were thinned in 1939 and 1940. For a 5-year period the western redcedar responded vigorously to the imposed treatment, but thereafter the crowns of released individuals appeared thin and chlorotic, and growth leveled off to that of the untreated areas. Incidence of Armillaria mellea was thought to be the principal contributing factor to the decline in growth and poor appearance of the released individuals and Koenigs began a study which will be discussed in the forest disease section of this report.

During the summer, the superintendent and one of the summer assistants measured the surviving members of the Weidman Arboretum. This arboretum was established in 1929, and one hundred acres were set aside for the planting of native and exotic tree species. The purpose of the arboretum, as stated in the experimental forest guidebook, was to establish small stands of various tree species to test their adaptability to the climate and to provide examples for educational purposes. The arboretum received little care in past years and records on the past performance of the individual species were almost nonexistent. For these two reasons, it was difficult, if not impossible, to determine the factors contributing to the loss of many of the species. However, measurements of the remaining species were made and their appearance noted. The study was presented to the 1961 Northwest Science meeting in Spokane, Washington.

Western white pine yield plots on the Colville and Kaniksu National Forests kept the superintendent and the summer assistants busy in the late summer and early fall. The data were tabulated and sent on the Spokane.

Cones were counted on the prolific white pine seed tree in Area 63 in August 1961. The tree produced 249 cones in 1961, which was a considerable increase over that of 1960. Forty cones per tree is considered a good cone crop. This tree has produced an average of 324 cones per year during the period 1935-50.

Burt Barnes and his crew arrived in September to measure and maintain the white pine vigor quality plots. Other projects in forest management included the tabulation of data of various plot records received from Spokane, and the collection of Alnus tenuifolia cones to fill foreign requests.

Forest Disease Research

During the spring of 1961, Ed Wicker established a field plot to study the host specificity and age susceptibility of dwarfmistletoe on Douglas-fir and western larch. The plot was planted with seedlings ranging from 3 to 6 years of age. Species planted included Douglas-fir, western larch, grand fir, subalpine fir, lodgepole pine, ponderos pine, western white pine, western hemlock, western redcedar, and Englemann spruce. The seedlings were inoculated with dwarfmistletoe seed during September and October. Douglas-fir and western larch seedlings were inoculated with seed of Arceuthobium douglasii, Arceuthobium campylopodium f. laricis, Arceuthobium campylopodium f. campylopodium, Arceuthobium campylopodium f. tsugensis, Arceuthobium campylopodium f. abietinus, and Arceuthobium americanum. Seedlings of the remaining species were inoculated with the seed of Arceuthobium douglasii, and Arceuthobium campylopodium f. laricis. Results from the study will be incorporated in Ed Wicker's dissertation of the Ph. D. degree in Plant Pathology at Washington State University.

Observation on the occurrence of Armillaria mellea fruiting bodies within treated area of plots 180 and 181, where understory western redcedar had been released and thinned in 1939 and 1940, led to a more detailed study of infection characteristics by Jerry Koenigs. Among the preliminary findings, Armillaria mellea was isolated from the roots of 40 percent of the released trees and from only 15 percent of nonreleased trees. Further investigation of causative environmental factors is planned.

Work on the pole blight spots dropped to maintenance and the taking of soil samples by Wicker's crew.

Forest Fire Research

Activities in the field of forest fire research were rather limited on the experimental forest during the past year. Daily fire-weather measurements were made at the clearcut station. This station is the oldest fire danger station in the United States and data were taken for the 39th successive year.

Bob Mutch and Art Brackebush of the Northern Forest Fire Laboratory used the forest as a headquarters when working in the Priest River area.

A fire plan was developed for the Priest River Experimental Forest in May. Its content is similar to that written for Deception Creek in that lines of responsibility are defined between the experimental forest and the Falls Ranger Station of the Kaniksu National Forest.

Forest Influences

Weather has been a constant area of study on the experimental forest since 1911, and 1961 was no exception. Fire-weather measurements were taken daily at the clearcut station. Daily reports were taken from the control weather station for the 49th successive year. Precipitation was recorded throughout the year along Benton Creek at three locations.

Data from the gaging station on Benton Creek entered its 23rd year with the taking of weekly records. The gaging station was constructed in 1938 and has given a continuous record of runoff from the 960-acre Benton Creek watershed. Snow measurements on the Benton Spring and Benton Meadow Snowcourses were made from January through May. Springflow and soil moisture measurements were made monthly at Benton Spring.

WEATHER SUMMARY, 1961

PRIEST RIVER EXPERIMENTAL FOREST (CONTROL STATION)

	Precipitation		Temperature			
Month	Normal*	1961	Normal Avg. Max.	1961 Avg. Max.	Normal Avg. Min.	1961 Avg. Min.
Jan.	4.02	3.58	30.3	34.0	16.6	21.8
Feb.	3.09	5.96	36.9	40.2	18.3	28.7
March	2.65	3.04	45.3	47.5	23.5	27.4
April	2.00	2.23	57.6	54.4	29.6	31.5
May	2.18	4.52	66.7	65.6	36.9	38.6
June	2.27	1.53	73.5	81.6 1/	42.5	44.3
July	0.89	0.90	83.1	85.6	45.5	47.7
Aug.	1.04	0.84	80.2	89.0 2/	43.4	48.5 3/
Sept.	1.67	0.79	70.9	67.6	37.8	35.3
Oct.	2.96	4.05	56.6	52.9	32.1	31.5
Nov.	3.76	2.57	39.6	37.1	26.7	20.5
Dec.	4.37	6.52	32.5	31.0	21.1	19.0
Annual	30.91	37.53	43.7	54.66	31.0	32.90

1/ Average maximum temperature for June 1961, surpasses previous record of 81.0 degrees, June 1922.

2/ Average maximum temperature for August 1961, surpasses previous record of 88.3 degrees, August 1958.

3/ Average minimum temperature for August 1961, surpasses previous record of 47.7 degrees, August 1941.

* Normal reflects 49-year average.

MONTHLY PRECIPITATION, 1961

AT THREE LOCATIONS ON BENTON CREEK

Month	Control Station		Benton Dam Station		Benton Spring Station	
	Normal 1/	1961	Normal 2/	1961	Normal 3/	1961
January	4.02	3.58	4.39	3.57	2.89	3.33
February	3.09	5.96	3.68	6.28	3.68	7.29
March	2.65	3.04	3.17	3.30	4.08	5.37
April	2.00	2.23	2.23	2.75	2.88	2.21
May	2.18	4.52	2.71	4.84	5.50	6.97
June	2.27	1.53	2.60	1.68	1.92	2.51
July	0.89	0.90	1.02	1.25	0.62	0.92
August	1.04	0.84	1.19	0.98	1.36	1.31
September	1.67	0.79	1.54	1.12	1.52	1.06
October	2.96	4.05	3.54	4.01	3.14	4.12
November	3.76	2.57	4.35	3.15	6.15	3.20
December	4.37	6.52	4.72	7.65	4.37	7.16
Annual	30.91	37.53	35.20	39.58	39.99	45.45

1/ Normal reflects 49 year average

2/ Normal reflects 17 year average

3/ Normal reflects 4 year average

SNOW DEPTH AND WATER CONTENT, 1961

PRIEST RIVER EXPERIMENTAL FOREST

Month	Benton Meadow Course				Benton Spring Course			
	Depth		Water Content		Depth		Water Content	
	Normal*	1961	Normal	1961	Normal	1961	Normal	1961
January	11.9	9.7	2.7	1.6	30.6	32.6	8.3	8.0
February	19.5	11.6	4.9	2.5	47.4	41.6	13.9	11.0
March	20.1	9.1	6.2	2.7	56.8	52.6	18.9	15.6
April	6.3	Bare	2.3	---	56.6	55.4	20.9	21.4
May	Bare	Bare	---	---	34.8	43.0	15.2	17.9

* Normal figures reflect 25 year average.

ADMINISTRATIVE ACTIVITIES

Personnel, 1961:

Superintendent: Stanley B. Carpenter

Handyman: Milo V. Coons

Summer Assistants: Robert L. Arnold
Richard J. Baier
Robert D. Doty

Milo Coons again returned to the Experimental Forest and did an excellent job dealing with the many and varied maintenance problems that arose in 1961. He even found himself measuring plots and taking weather measurements, when necessary. The three summer assistants did a very able job. Bob Arnold held down the weather measurements and Dick Baier and Bob Doty measured the many forest management research plots that were measured in 1961.

Stan Carpenter had to leave for the Army in September 1961, and was replaced by Bob Doty temporarily until Bob Pfister's arrival in November. A few of the Intermountain Forest and Range Experiment Station personnel to visit the Experimental Forest in 1961 were:

Chuck Wellner
Glenn Deitschman
Ray Boyd
Burt Barnes
Jim Hanover
Bob Mutch
Art Brackebush
Jerry Koenigs
Ed Wicker
Don Graham
Al Stage

MAINTENANCE ACTIVITIES

Maintenance of the physical plant on the Priest River Experimental Forest continued to be a problem in 1961. Most of the buildings, wiring, plumbing, etc., are now 20 years old and, as can be expected, many problems were encountered. The limited seasonal use that most of the buildings receive causes many of the maintenance problems of the forest. An attempt was made to keep maintenance activities on a repair basis due to the uncertainty of the Experimental Forest's future.

Cottages 1, 2, and 3 were coated with log oil and their roofs stained during the summer. The furnace in the office building developed a severe leak in early 1961 and had to be repaired by a local contractor. The roof of the shop building was so deteriorated that a new roof was approved in late summer. It was decided to repalce the old shake roof with aluminum roofing as is presently on buildings at Deception Creek Experimental Forest. Milo Coons and one of the summer assistants completed the job in early September.

As usual, the biggest headache of the 1961 season was the water system. For much of the year the forest suffered from lack of water pressure. A rotten water pipe was determined to be the principal cause. The proper-sized pipe was not available and Milo was a wooden pipe by hand to replace the damaged one. The pipe was installed in the system and resulted in excellent water pressure for a few days until another pipe in the system could not bear the strain. All in all, it was a very heart-breaking affair.

During the winter of 1960, beavers severely damaged many pole-sized western redcedar along lower Benton Creek. Falls Ranger Station administered a pole sale in this area in 1961 to salvage these trees.

PUBLIC RELATIONS

An early season visitor to the Experimental Forest was the Montana State University dendrology class in February. The class was composed of 60 members and found the snow in the arboretum to be no problem in their tour. Several schools and universities made use of the facilities offered by the Experimental Forest in 1961. Members of the fifth and sixth grades from Idaho Hill School of Newport, Washington, were given a tour of the Experimental Forest in May. Dr. Daubenmire of Washington State University, with several students, made his annual plant ecology field trip through North Idaho in May, and spent a day and night on the forest. Approximately 50 members from the State of Idaho Youth Camp, located on Priest Lake, spent most of a day on the forest during the summer. Dr. Wang and several graduate students from the University of Idaho made several trips to the Experimental Forest in 1961 to study the Ponderosa Pine Racial Varieties Plot.

INSPECTIONS

June 22: Inspection of the fire weather station by Bill Krumm, U. S. Weather Bureau, Missoula, Montana; and Mr. Miller, Supervisor's Office, Kaniksu National Forest, Sandpoint, Idaho.

June 28: Forest Management functional inspection by Wellner, Deitschman, and Boyd.

July 11: Inspection of the Control Weather station and Benton Dam precipitation gage by Howard Kapper, U. S. Weather Bureau, Boise, Idaho.

MEETINGS

One of the highlights of the 1961 season was the Western Forest Genetics Association Field Trip to the Experimental Forest on October 18. Seventy-five members viewed a few of the research activities on the forest.

On October 31 and November 1, the Inland Empire Forest Research Advisory Committee held their fall field meeting on the Experimental Forest. Major emphasis was placed on the Station's forest disease research program.

COOPERATION

The Falls Ranger Station aided the Experimental Forest personnel in many ways during 1961. Crews from the ranger station kept the Experimental Forest roads operational throughout the year and national forest personnel aided the superintendent in the measurement of the Benton Spring snowcourse during the winter months.